Operations and the Pbar Stacking Monitor with Momentum Thermostat

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There is a ACNET secondary application that has been written to monitor the Accumulator during stacking. A thermostat which controls the core 4-8 GHz momentum cooling has been included in the application. This note is intended to be a quick introduction to starting and using the application. A more complete discussion of the application can be obtained from:
'http://beamdocs.fnal.gov/cgi-bin/public/DocDB/ShowDocument?docid=1942'.

Starting the Application:

1. The starting monitor uses the Pbar VSA, and is started from P142.
2. Load P142 and click 'Start VSA' on the menu bar.
3. Negotiate the selection boxes to get the new version of the VSA
4. Once the SA starts click on 'Function Mode' in the menu bar
5. Select 'Stacking Mom Thermostat' as the desired function. A:VSARST will be 13 while running the Stacking monitor with the thermostat enabled.
6. While starting the application, instructions are given at the top of the SA window for centering the 4-8 GHz array.

    Look at PBar TV channel 20 showing SA1.
    The application will load the analyzer with signals from both of the momentum systems. (Array for the 2-4 Ghz system is not movable)
    Overlay the two notches in the signals by moving A:MARAYD.
    Click on the application to have it start thermostating.

Using the application:

Traces displayed by the stacking monitor:

The green trace is the Stacktail profile just prior to ARF1 turning on.
The cyan trace is the Stacktail profile just after ARF1 has finished it's ramp.
The red trace is a ratio of the other two traces.

The application outputs several useful parameters which can be found on P38, MCGINNI, subpage 15.

Injection parameters:

A:IBMINJ is the amount of beam injected on the injection orbit.
A:LFTOVR is the amount of beam left at injection after ARF1 has ramped.
These are affected by ARF1 injection freq. and bucket size, the energy match between the Accumulator and Debuncher, and Accumulator closure. The goal is to maximize A:IBMINJ while minimizing A:LFTOVR.

Stacktail parameters:

A:DRIBL1 and A:DRIBL2 are measures of the Stacktail backstreaming
These are affected by ARF1 deposition freq. and bucket size, the cycle time,

and the amount of power in the stacktail system. The dribble values should be small which would indicate little or no backstreaming.

Core Parameters:

A:CENFRQ and A:FRWDTH give the frequency and width of the core. The Stacking Monitor will try to keep A:FRWDTH at a given value by regulating the power output of the core 4-8 GHz momentum system. The value regulated to is given in the array parameter A:CMFRWD. Elements of the array match 10 ma steps in the pbar stack size.

As with all tuning these are just sugguestions. The goal is to maximize the stack rate in a reasonable manner.